LET'S GO WALKING

THE MITCHELL TRAIL

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A TRAIL GUIDE TO VIEW RECOVERY OF THE NATURAL ENVIRONMENT FROM THE CERRO GRANDE FIRE

PURPOSE

This site provides information about natural recovery of areas burned by the Cerro Grande fire, particularly, areas of high-intensity burn. Our intention is that you print out a copy to take along with you as you walk along these trails.

To provide information about recovery in a low-elevation site, this hiking guide describes the Mitchell trail.

July 2000

July 2001

SAFETY CONCERNS

• Do not go into any canyon if it is raining, is likely to start raining, or there has been recent rains. These areas are subject to flash floods.

• Be aware of the techniques to protect yourself from lightning.

• Do not walk the trails when there is wind and chance of trees falling.

• Take plenty of water and protect yourself from the sun.

• Avoid encounters with large mammals.

• Watch out for poison ivy. Although presently very spotty, it is there! Some people develop rashes from touching the plant or the white berries. AND DON'T EAT THE BERRIES!

THE FIRE

The Cerro Grande fire burned from May 4 through May 28, ultimately burning 43,000 acres. High-intensity burn (areas where all trees were killed) made up 34 per cent of the 43,000 acres. The Mitchell trail area burned during May 10. After the fire, the many acres of high-intensity burn that were upstream from the community or Laboratory sites were seeded with annual and perennial grasses. Volunteers raked, seeded, and mulched areas of hydrophobic soils. In some cases, Hotshots downed trees to provide for erosion control and wattles were used in drainage areas to slow water.

Mitchell trail area after the fire, early June 2000

Mitchell trail area after August 2000, seeded grass emerging

MITCHELL TRAIL

The Mitchell trail has long been a favorite trail of residents of Los Alamos. It begins near the intersection of Yucca, 45th, and Arizona streets and meets a trail on the top of Guaje Ridge. The trailhead is near a small parking area off of Arizona, or one can begin the walk on the dirt road leading to the water tank. The trail was originally constructed as an Eagle Scout project in 1974 by David Mitchell and Troop 329. David died as a young adult and the trail was named for him.

October 2000

July 2001

Corner of Arizona, 45th, 46th, and Yucca

This guide begins at the trailhead and ends near the trail to the natural arch within Rendija Canyon.

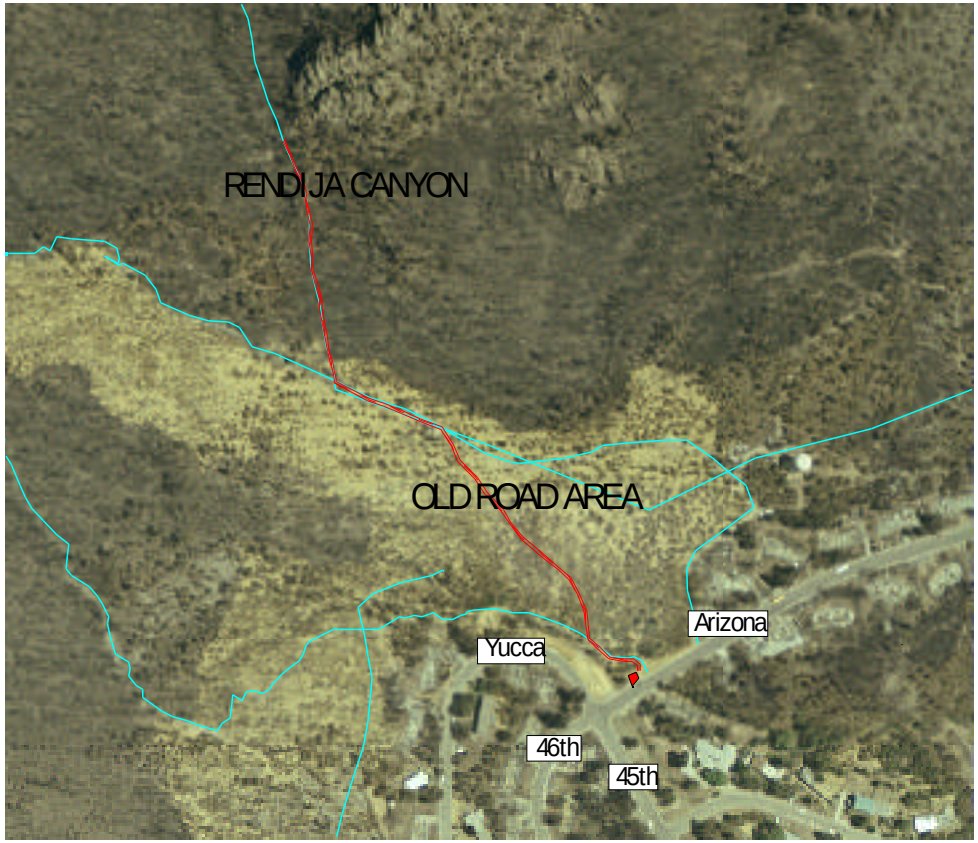
Trailhead

EROSION AND REHABILITATION

One of the big concerns following the Cerro Grande fire was increases in flooding resulting from the loss of vegetation.

To address this concern, burned areas were aerially seeded with grass species, erosion barriers were created, and, in some places, large areas of bare soil were raked, seeded, and mulched with straw.

The portion of the Mitchell trail described in this guide is overlaid on a digital orthophoto (taken in the summer of 2000) on the accompanying map. The green areas (lower right) are live trees. The gray areas (upper half and lower left) were severely burned. The straw-colored areas (middle) are severely burned areas where volunteers raked, seeded, and put straw mulch on the soil to aid in vegetation recovery. When you look at these rehabilitated areas today, you will see burned trees with a vigorous green understory of grasses and wildflowers.

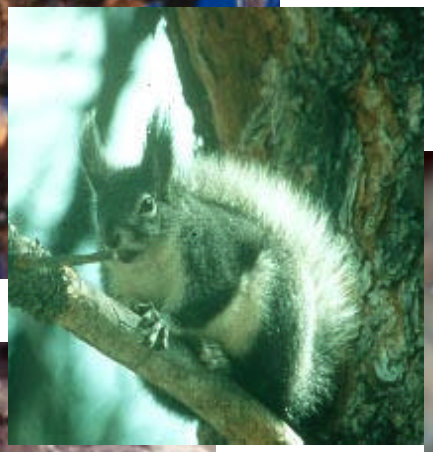


One branch of the trail once meandered along a narrow stream channel and provided access to a natural arch. Today, the channel is wide and filled with pumice, rocks, and debris washed from the mountain, evidence of powerful floods washing off the slopes. **CAUTION** must be taken when hiking. Thunderstorms in the upper regions of the canyon may produce flash floods, so hiking during or after rainstorms is considered unsafe and extremely unwise. While you are in this section, follow the cairns (small rock piles) to stay on the trail towards the arch.

New abraded stream channel formed by flash floods

SMALL CRITTERS YOU MIGHT SEE

Abert's squirrel



Prairie lizard

As we have walked the trail both last summer and this, we have seen a number of small animals including Abert's squirrel, the Prairie lizard, various spiders, and a little garter snake. You may also hear the buzz of bark beetles working on the dead wood. Deer may be seen and bear may be roaming the area.

Garter snake

OLD ROAD AREA

From the trailhead, follow a short segment of trail up to the road leading away from the water tank. This area was burned severely by the Cerro Grande fire. Because of the heat intensity from the fire, much of the area had hydrophobic soils. These soils have a crust that prevents absorption of rain. As a result, water sheets off. Without rehabilitation, the crust is eventually broken up by rainfall, animal tracking, and other natural mechanisms. To protect the community from excessive flooding, this area was part of the rehabilitation efforts. The soils were raked, seeded, and mulched with straw.

In August 2000, three months post-fire, the area looked like this.

Today you will find that many grasses and shrubs have sprouted. Some shrubs have grown up to five feet tall as of August 2001, just over one year after the fire.

THE PLANT COMMUNITY

The trees within this zone of the Mitchell trail are nearly all ponderosa pine (***Pinus ponderosa***). There are a few scattered Douglas fir (***Psuedotsuga menziesii***).

Examine the trees and note that ponderosa pine has a thick, fire-resistant bark that protects it from fire damage if the fire is not an intense crown fire as occurred in this area. The area has been thinned since the fire and therefore the trees are now spaced apart. The density of the surrounding forest before the fire contributed to the intensity of the fire. Within the thinned area some trees have survived with portions of their crown remaining.

Douglas fir cones

Douglas fir needles

Ponderosa pine needles and male cones

SHRUBS

Several species of shrubs can be observed along the road. The most obvious ones are mountain mahogany, Gambel oak, and New Mexico locust.

MOUNTAIN MAHOGANY

Last year in August, the mountain mahogany was just a few inches tall. This year it is one to two feet tall. As it matures (in the next few years) the distinctive seed heads will grace the landscape.

Sprouting mountain mahogany immediately after the fire

Mature plants produce feather-like seeds

OAKS

The oaks began to sprout immediately after the fire and were from 6 inches to 1 foot tall last August (2000). Their green sprouts livened the blackened landscape. Today as you walk through the area you will see oak that is 3 to 6 ft tall and many more sprouts.

Oak sprouts lit up by the morning light in August 2000

Oak in July 2001

BUCKBRUSH

Buckbrush is found within the burned area. Seeds of this species may have been in the soil and the fire stimulated germination. Buckbrush is a favorite browse plant of deer and elk. The stems have thorns, and the plant will be covered by white blossoms in the early part of the summer.

Occasional buckbrush can be found along the road and trail

Close-up of buckbrush

WILDFLOWERS

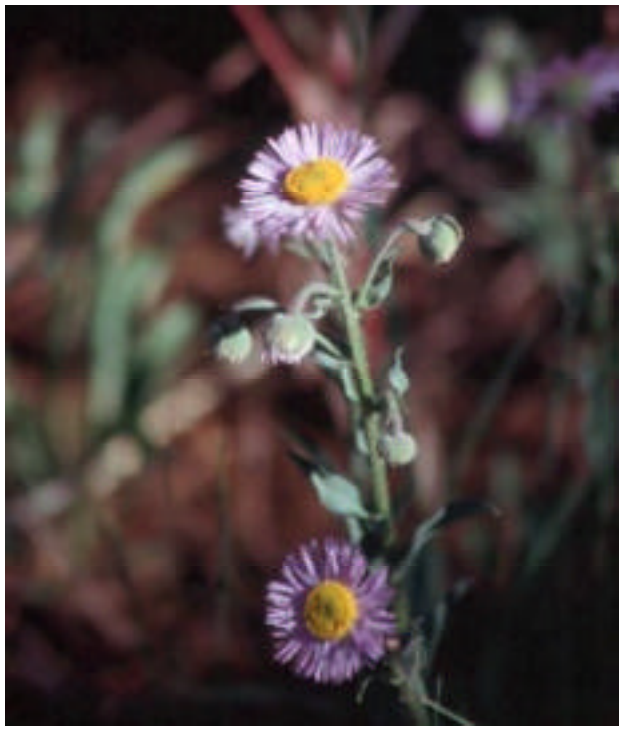
When the tree canopy is opened up by fire the increased light and lack of competition provides a niche for many species of wildflowers. Here are some you will find along the trail.

Scarlet trumpeter, or Gilia

Golden aster

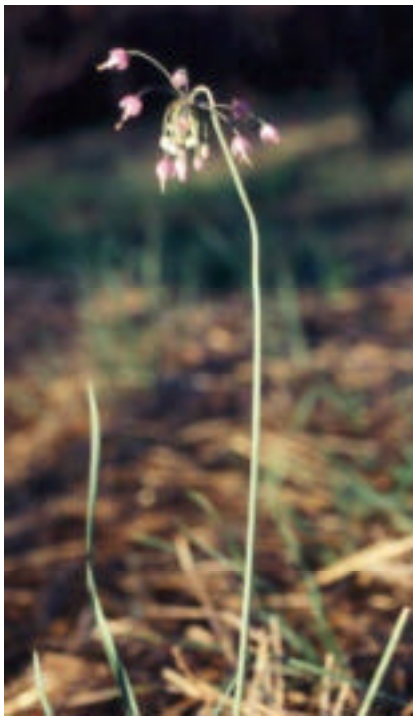
Pinque, or bitterweed

MORE WILDFLOWERS



Purple daisy

Goldenrod



Wild nodding onion

In August 2000, only a few species such as spreading dogbane, meadowrue, and Rocky Mountain clematis were seen along the trail. Our recent trek revealed over 20 species, some in large bright clumps. There is much more diversity this year.

Wildflowers we saw along the trail at the end of July 2001

James geranium (***Geranium caespitosum***)

Nodding onion (***Allium cernuum***)

Pinque (***Hymenoxys richardsonii***)

Perky Sue (***Hymenoxys acaulis***)

Towsend's aster (***Townsendia incana***)

Scarlet trumpeter, or gilia (***Ipomopsis aggregata***)

Golden aster (***Heterotheca*** spp.)

Scarlet bugler (***Penstemon barbatus***)

Goldenrod (***Solidago*** spp.)

Hooker's primrose (***Oenothera hookeri***)

Golden smoke (***Corydalis aurea***)

Horsemint (***Mondarda menthaefolia***)

Wild strawberry (***Fragaria americana***)

Wooten's senecio (***Senecio wootoni***)

Spreading dogbane (***Apocynum androsaemifolium***)

Meadowrue (***Thalictrum fendleri***)

Horseweed (***Conyza canadensis***)

Harebell (***Campanula rotundifolia***)

Puccoon (***Lithospermum*** spp.)

Groundsel (***Senecio eremophilus***)

Rocky Mountain clematis (***Clematis pseudoalpina***)

Goosefoot (***Chenopodium*** spp.)

Golden smoke

GRASSES

Both native and seeded grasses can be found along the Mitchell trail. Where areas were raked and mulched, good stands of seeded grasses are found. Native grasses include little bluestem, big bluestem, mountain muhly, and Junegrass.

Little bluestem, native

Annual barley, seeded

Annual rye, seeded

Grasses we saw along the trail near the end of July

Mountain muhly (***Muhlenbergia montanus***)

Annual rye (***Secale*** spp.)

Annual barley (***Hordeum*** spp.)

Mountain brome (***Bromus marginatus***)

Slender wheatgrass (***Elymus trachycaulus***)

Wheat (***Triticum*** spp.)

Cheatgrass (***Bromus tectorum***)

Little bluestem (***Schizachyrium scoparium***)

Big bluestem, or turkeyfoot (***Andropogon gerardi***)

Junegrass (***Koeleria cristata***)

Big bluestem, or turkeyfoot

Shrubs we saw along the trail

Buckbrush (***Ceanothus fendleri***)

Gambel oak (***Quercus gambelii***)

Cliffbush (***Jamesia americana***)

Chokecherry (***Prunus virginiana var. melanocarpa***)

Mountain mahogany (***Cercocarpus montanus***)

New Mexico locust (***Robinia neomexicana***)

PONDEROSA PINE PLANTINGS

Many volunteers have helped plant the small ponderosa pine seedlings seen snuggled in rocks or surrounded by vexar tubing. The seedlings have been planted at a spacing that will provide a more open forest. Please do not disturb these tender plants. To date, many seem to have survived.

WARNING: DO NOT CONTINUE FURTHER IF IT IS RAINING OR HAS RECENTLY RAINED!

RENDIJA CANYON

Rendija Canyon has its origin on the eastern flank of the Jemez Mountains. As you walk up the old road, a trail will take off to the right. This is the canyon branch of the Mitchell trail and leads to the trail that goes to the natural arch on the rock flank in the upper reaches of the canyon. Before the fire, the only way to view the arch was a strenuous 300-ft climb. Now the arch is visible through the trees and will become more visible as the trees begin to fall. As you walk along, look for the arch. It will be a delightful surprise!

Our tour ends at the arch trail but the trail continues and meets up with the Guaje Ridge trail.

THE TRAIL THEN …..

As the mountain greens, the memory of the blackened landscape fades. These photographs remind us what sections of the trail looked like in August 2000. Compare it with the next picture and be amazed!

AND NOW!

THE INNER CANYON

The slopes of the inner canyon are steep. The seeded grasses did not become well established. Nevertheless, there are a variety of native species becoming re-established, including oak and mountain lover (***Pachystima myrsinites***).

MOUNTAIN LOVER

The success of recovery of a species is determined by its ability to survive. Plants that have underground stems (rhizomes) protected from an intense fire will recover rapidly. Runners such as found on the wild strawberry also help plants to spread. Mountain lover is a low ground cover that will help stem erosion. It is a native species that was present within the shaded slopes of the canyons before the fire.

CHOKECHERRY

One of the major shrub species sprouting within the canyon and along the slopes next to the stream is the chokecherry. In a few years these plants will provide food for birds and small mammals. Other shrubs include cliffbush and oak.

Sprouting chokecherry

Mature plants will produce a cherry-like fruit eaten by birds

OBSERVE THE GREENING OF THE MOUNTAIN

A periodic visit to this trail will provide the hiker with a sense of the recovery of the natural environment. Wind and rain will slowly change the landscape through nourishing new plants, erosion, and blow down. Each season and each year both large and subtle changes will provide a new view of the mountain. We suggest you visit this trail in different seasons. Pick a favorite spot to watch and each time see how it has changed. Each time see how you have changed.

October 2000 (top); July 2001 (right)

RECOMMENDED READING

Would you like to know more about the history, trails, and fire ecology? Here are some references:

Dorothy Hoard, ***Los Alamos Outdoors,*** Los Alamos Historical Society (1981). This book provides interesting tidbits about the trails and areas of the Pajarito Plateau. Published in 1981, black and white pictures can give you an idea of changes to various areas.

Craig Martin, ***Los Alamos Trails; Hiking, Biking and Cross-Country Skiing***, All Seasons Publishing (1999). This book is about trails of the area and gives mileages and information.

Teralene Foxx, "Out of the Ashes," Los Alamos National Laboratory report LA-LP-01-20 (2001). This booklet provides information about natural recovery after the fire.

Teralene Foxx and Dorothy Hoard, ***Flowering Plants of the Southwestern Woodlands,*** Otowi Press (1995)***.*** This book is a comprehensive field guide for flower identification.

Randy Balice and Brian Oswald, "Fuels Inventories in the Los Alamos National Laboratory Region," Los Alamos National Laboratory report LA-13572-MS (1999).

Randy Balice et al., "Forest Surveys and Wildfire Assessments in the Los Alamos Region; 1998-1999," Los Alamos National Laboratory report LA-13714-MS (2000). The Balice reports describe results of forest surveys in relation to risks of wildfire.

ACKNOWLEDGMENTS

We would like to acknowledge various people who have helped to make this trail guide possible. Randy Balice provided some facts related to the pre-fire conditions along this trail. Dorothy Hoard accompanied Terry on various hikes to look at the recovery. Hector Hinojosa and Teresa Hiteman provided the editing and formatting. The support of John Huchton and Carey Bare, Team Leaders for the Environmental Information and Natural Resources Management Teams, is appreciated. Diana Webb, Group Leader at ESH-20 has also been supportive. We would also like to thank David Van Etten, IM-1, who provided the support to place this document on the ESH-20 web page.

Daisies in the grass